AHAM
association of home appliance manufacturers

1111 19th street, nw ▲ suite 402 ▲ washington, dc 20036
202.872.5955 ▲ fax 202.872.9354 ▲ www.aham.org

DOCKET
#04-AAER-1
November 2, 2004

California Energy Commission
1516 Ninth Street, Mail Station 4
Sacramento, CA 95814-5512

Enclosed you will find the comments of the Association of Home Appliance Manufacturers (AHAM) regarding the Expressed Terms of Proposed Regulations (45-day language), Amendments to the Appliance Energy Efficiency Regulations, California Code of Regulations, Title 20, Sections 1601-1608.[1] AHAM represents the manufacturers of major, portable and floor care home appliances.

Overall Comments on the Draft CEC Regulations of External Power Supplies

AHAM's membership includes companies who manufacture cordless rechargeable appliances. These appliances include such products as cordless rechargeable shavers, toothbrushes, massagers, can openers, electric knives, and vacuum cleaners. Manufacturers of these and other appliances products that employ rechargeable battery functionality would be severely affected by the proposed regulations on External Power Supplies as written in the September 10, 2004 Draft as it includes appliance battery chargers with external power supplies. With the present CEC test procedure, consumers might save 3 cents in electricity per year. As we have indicated herein, the costs of rechargeable appliances employing appliance battery chargers may rise more than the energy saved over the lifetime of the products and form a **NEGATIVE PAYBACK**. In addition, this could result in fewer models of rechargeable appliances available to the citizens of California, with virtually no energy savings.

We object to the September 10 CEC Draft as its proposed standard on External Power Supplies (EPS) incorrectly includes constant current battery chargers for rechargeable home appliances in the definition of an EPS. By including these products, the draft regulation's test procedure does not appropriately measure the energy consumption or efficiency of these products.

In early 2004, the US Environmental Protection Agency's Energy Star program proposed that it create a voluntary program for External Power Supplies. On October 26, 2004 it published a draft of the program's criteria that included a definition of External Power Supplies that does not include Battery Chargers used in appliances. The September 10 CEC Draft does not include this same definition. We ask that the California Energy Commission use the same definition of

[1] Express Terms of Proposed Regulations (45-Day Language), Amendments to Appliance Efficiency Regulations, September 10, 2004 (the "September 10 CEC Draft")

External Power Supplies as the U.S. EPA Energy Star program so as avoid confusion in the marketplace and unnecessary burdens on the consumers.

Section 1602 Definitions.

The most recent CEC definition of External Power Supply is:

CEC Section 1602 (u) Products
Current definition of EPS
" 'Single Voltage external AC- to DC power supply' means a device that:
(1) is designed to convert line voltage AC input into lower voltage DC output;
(2) is able to convert to only one DC output voltage at a time;
(3) is sold with, or intended to be used with, a separate end-use product that constitutes the primary load;
(4) is contained within a separate physical enclosure from the end-use product;
(5) is connected to the end-use product via a removable or hard-wired male/female electrical connection, cable, cord, or other wiring;
(6) does not have batteries or battery packs that physically attach directly (including those that are removable) to the power supply unit;
(7) does not have a battery chemistry or type selector switch and at least one of the following:
(i.) an indicator light
(ii.) a state of charge meter;
(8) has a nameplate output power less than or equal to 250 watts."

There are several deficiencies in this definition:

1. **This definition is inadequate and does not adequately identify appliance battery chargers.** As AHAM has pointed out in testimony to the CEC, this definition seeks to put appliance battery chargers together with External Power Supplies, when they are different products. An External Power Supply is a power conversion product that changes line voltage (120V AC) to some level less than 42V AC in order to power a product in its intended function. An example might be the Class 2 transformer used to convert power for a computer printer, scanner, or telephone answering machine. A battery charger is not the same electrically nor does it have the same function. A battery charger includes the power conversion process together with power regulation to optimize the performance of rechargeable batteries and ensure that the rechargeable appliance is constantly ready for operation. Appliance battery chargers are constant *current* sources, whereas external power supplies are constant *voltage* sources.
2. **The definition is confusing and can create unnecessary and arbitrary divisions of products in the marketplace.** For example, within the category of household cordless rechargeable vacuum cleaners, this definition could lead to models by the same manufacturer that would be included in the scope of External Power Supplies and models that would not be included. While the different models could be functionally the same, approximately the same size, use the same energy, and available through the same retailers, they would be considered different under the CEC definition.

3. **The definition shown would require constant current battery chargers that operate at an optimal charging current level to be tested at a variety of currents**. This unfairly disadvantages the manufacturers of battery chargers in the marketplace.
4. **The definition will not adequately measure the energy consumption of battery chargers.** The CEC definition and the accompanying test procedure measure the wrong characteristics of battery chargers and would force manufacturers of appliance battery chargers and appliance battery rechargeable products to alter their product to meet an arbitrary and improper definition, while not addressing the important energy characteristics of a battery charger. By forcing many battery chargers to meet the proposed CEC regulation level of "no-load" condition, the electrical design of many battery chargers will likely need to be changed, but this change will have minimal impact on the energy usage for citizens in California, since these products rarely, if ever, see a "no-load" condition. This will negatively impact the cost of battery rechargeable appliances and result in a negative payback to consumers.

Section 1604 (u) Test Methods for External Power Supplies.

Section 1604 (u), test method for External Power Supplies refers to an earlier version of the EPA Energy Star test procedure. The procedure should be updated to reflect the EPA's October 26, 2004 version, which we believe will be the final version and published this year. If the CEC persists in using an older definition and test procedure, this will create confusion in the marketplace, with testing laboratories, and manufacturers.

- **The test procedure contains serious errors.** The test procedure is improper in measurement of appliance battery chargers due to its reliance on the nameplate rating. Most appliance battery chargers carry a rating on the nameplate label of the output of the full battery charging circuit. However, the older version of the EPA test procedure that the CEC is referencing would require battery chargers to measure the output of the power conversion transformer and reference its efficiency against the nameplate. This method is biased against appliance battery chargers, will penalize this class of products, and will result in confusion in testing. This is all the more reason why a proper test procedure for appliance battery chargers should be developed.

Importantly, EPA has recognized its earlier February 13, 2004 draft did not adequately address the testing of constant current, appliance battery chargers and as such modified its program in its October 26, 2004 Draft 4 notice (See enclosed) to state that appliance battery chargers will be exempt from the Energy Star program for 1 year while a more appropriate test procedure is developed.

> "Note: The language above explicitly excludes battery charging systems typically found in household appliances so that EPA can investigate them further and, as necessary, develop a test method and specification that will best capture their energy savings opportunities. **An exclusion is being proposed so as to allow for additional research and test procedure development while not delaying the introduction of the overall external power supply specification**." [Emphasis is contained in the EPA draft.]

The California Energy Commission should maintain consistency with US EPA Energy Star on this test procedure.

Section 1605.3 (u) State Standards for Non-Federally Regulated Appliances.

The regulations proposed are designed for the energy efficiency of a constant voltage external power supply and *not* household appliance battery charger. While the requirement of a minimum level of efficiency might affect all power conversion products, the chief limitation of these proposed regulations is the item on "Maximum Energy Consumption in No-Load Mode." This item is improper for appliance battery chargers. Most, appliance battery chargers spend virtually no time in "no-load" condition. To be held to an arbitrary level of energy consumption when the product is not operating in "no-load mode" is improper.

Coupled with improper measurement by using the wrong test procedure, the regulation of "Minimum Efficiency in Active Mode" is improper and biased against appliance battery chargers. By requiring appliance battery chargers to measure their output against the nameplate rating, manufacturers of appliance battery chargers are penalized for rating their products in their full battery charger condition, and operating where they would normally. The September 10 CEC draft requires that the cord of a battery charger be cut and only part of the charger measured for its efficiency.

The CEC's Process

The California Energy Commission published a definition of external power supplies in May 2004. At that time, battery chargers were not included. It was not until the 45-day language was published in September 2004 that appliance battery chargers were included. This has not allowed our industry adequate time to gauge the impact, gather information on energy usage, or conduct a full evaluation of the economic impact to the citizens of California by this change.

Potential Energy Savings from an EPS Regulation

AHAM has calculated the potential energy savings by the use of the CEC definition and test procedure (see attached). In addition, we are attempting to gather information on the manufacturing cost of producing low-wattage, inherently limited, regulated battery chargers that will meet the CEC proposed regulations. One manufacturer of external linear and switching power adaptors has listed their units and possible costs. In their catalog (copy of page attached) a 5 watt linear power supply is offered to the appliance manufacture in volume at $3.60/each. The lowest wattage switching power adaptor available is 8 watts and is offered in quantity at $19/each. This is cost to the manufacturer. If we apply the same multiplier (i.e. 1.99) that we employed for our comments to the CEC earlier this year,[2] the costs to consumers would be greater than $30. Furthermore, there are no guarantees that such a switching power adaptor will

[2] For the same reasons as stated in the AHAM filing on air cleaners, we do not believe the multiplier used by Arthur D. Little for a clothes washer analysis is applicable to small appliances. We do not have additional information to suggest other than our belief that an expansion of manufacturer's cost by 1.99 is not accurate for these products.

meet the safety, power regulation, harmonic distortion, performance, or quality characteristics demanded by rechargeable appliance manufacturers. Other AHAM members have reported that the cost increase would be between 100% and 400% for components to meet their requirements.

The consultants to CEC estimated the cost differential at $0.30 to $0.50 per unit. This difference may be true for some external power supplies but is not true for battery chargers.

At the October 13, 2004 hearing, two manufacturers of computer chip-type switching power adaptors presented testimony of the availability of some devices to meet the CEC proposed regulations. To our knowledge neither of these manufacturers currently supply any of these devices in the power range that are required by our manufacturers.

While we are not able to present a full picture of the energy efficiency of all appliance battery chargers, our latest test results show that the savings between representative 3 Watt and 5 Watt battery chargers that are currently manufactured to ones that would meet the proposed CEC regulation would be an Annual Unit Energy Savings of 0.274 kWh. At an electricity price average of $0.12/kWh, the savings per year to the citizens of California would be $0.033 per year. With the current test procedure, consumers might save 3 cents a year!

The information presented on lifespan of the External Power Supplies does not apply to battery chargers. In a full-on state, the design life of rechargeable battery products is less than 7 years. Considering all of these elements, the energy efficiency savings therefore does not equal the potential increase in consumer price over this time period and for appliance battery chargers THE PAYBACK IS NEGATIVE.

AHAM's Recommended Remedy

We acknowledge that the CEC has indicated they are willing to work with AHAM in the development of an appliance battery charger test procedure. We would ask that CEC adopt similar language to the U.S. EPA Energy Star program as described above to exempt appliance battery chargers[3] until a more appropriate test procedure is developed. More specifically, AHAM asks that the CEC allow for the development of a proper test procedure for appliance battery chargers as the industry is planning to work to develop a draft test procedure for appliance battery chargers by Spring of 2005 with the U.S. EPA. As the CEC regulation does not take effect until January 1, 2006, adequate time is available for industry and government to develop an appropriate test procedure and for the CEC to enact subsequent regulations.

---

[3] "Note: The language above explicitly excludes battery charging systems typically found in household appliances so that CEC can investigate them further and, as necessary, develop a test method and specification that will best capture their energy savings opportunities. **An exclusion is being proposed so as to allow for additional research and test procedure development while not delaying the introduction of the overall external power supply specification**."

Thank you for the opportunity to comment on the proposed regulation.

Sincerely,

Wayne Morris
Vice President